

# **ALTERNATIVE VACCINATION SCHEDULES, PARENTAL VACCINE DECISION-MAKING, AND THE ROLE OF NURSES**

by

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## Problem Statement

Increasing numbers of children are being immunized using alternative childhood vaccination schedules, due to a number of parental concerns about safety and children's health. While accurate information is critical to informing parents, issues of trust and empathy also play a major part in parents' decision-making. Nurses can play an important role in helping parents make informed decisions and are uniquely suited to provide the necessary knowledge and empathy.

## Background

Alternative vaccination schedules are becoming more popular among parents of young children over the last decade. Studies estimate that 10-15% of parents throughout the country are currently choosing to purposely delay or refuse some recommended vaccines, defined in the literature as "vaccine hesitant".(1-3) As opposed to "vaccine rejector" parents, vaccine hesitant parents do not completely reject vaccination, but question the need for the timing of some or all childhood vaccines on the current CDC schedule.(4) It is important to distinguish vaccine hesitant parents from parents who unintentionally miss vaccine deadlines due to lack of access to healthcare or scheduling conflicts. Vaccine hesitant parents are more likely, for example, to be white and make more than \$70,000 per year, but these parents are found across all races and income levels.(5) The majority of pediatricians (85%) have encountered parents in their practice that wish to immunize their children based on a schedule different than that recommended by the CDC and AAP.(6)

Alternative schedules were made more mainstream with the 2007 publication of “The Vaccine Book” by Dr. Robert Sears, a pediatrician and son of the famous parenting guru, Dr. William Sears. Dr. Sears presents parents with an example of alternative vaccination schedules to use with their children that involve omitting, delaying and spacing out certain immunizations so that children do not receive more than two shots per visit. Under his “Complete Alternative Vaccination Schedule”, all recommended early childhood vaccines are received, but many are not completed until years after their timing in the normal schedule. His “Selective Vaccine Schedule” involves skipping all recommended doses of MMR (measles, mumps and rubella), varicella, polio and hepatitis A. Researchers and vaccine advocates have taken issue with the validity of statements made by Dr. Sears about vaccines in his book. (7–10) He also emphasizes that no vaccine schedule is set in stone, and encourages parents to modify his schedules as they see fit. (11) Parents appear to be taking his advice to heart. Dempsey et al. found that only 8% of parents follow a well-known alternative vaccination schedule, with the majority of alternative vaccinators stating that they had created their child’s vaccination schedule themselves. (1) The most commonly refused or delayed vaccines are influenza, varicella, rotavirus and MMR. (1,11)

Parents choose alternative vaccination schedules for a number of reasons. (1,2,4,12) Most commonly, parents state concerns about overtaxing their child’s immune system by giving multiple vaccines at once or multiple vaccines to younger infants. Worries about vaccine safety are also common, and can include concerns about adverse side effects and potential toxins in preservatives or adjuvants found in vaccines. Another reason parents cite for using an alternative vaccination schedule includes a lack of belief in necessity of a vaccine because the disease is seen as treatable, non-serious, and potentially “better” for

the immune system than the vaccine. There also can be mistrust in medical professionals and the government concerning vaccine information among alternatively vaccinating parents. Misinformation concerning vaccines and their risks is commonly spread through books, websites, and message boards of anti-vaccine advocates.(13) It is difficult for most parents to judge the legitimacy of information online, and many turn to family members and friends for advice. (1,12) Parents often see alternative vaccination schedules as the middle ground between the medical establishment's CDC immunization schedule and a vocal minority of strong anti-vaccine advocates.(4)

There are pockets of the United States where alternative vaccination schedule use by parents is very popular, where up to 90% of children in a community do not have all recommended vaccines.(14) Most recommended childhood vaccines are required to enter public school, but parents may file a vaccine exemption for medical, religious or personal belief reasons. Personal belief exemptions are found in 20 states and religious exemptions are found in 45, with West Virginia and Mississippi as the only states with just medical vaccine exemptions. Children with a filed nonmedical exemption are defined as "vaccine exemptors" and may have parents that fully reject all vaccination or only refuse certain immunizations for their child. Multiple studies show that rates of vaccine preventable disease in a community correlate strongly with the percent of school-aged children who are vaccine exemptors.(15,16) Clusters of pertussis cases were three times as likely in census tracts that had higher than average nonmedical exemption rate.(16) Rates of exemption and the steps a parent must take to declare their child vaccine exempt vary greatly from state to state. (17,18) States where personal exemption is easy to declare (such as a parent

signing a simple form) have higher rates of students that are filed as exempt than those in which it is a more complex process (Figure 1). (19)

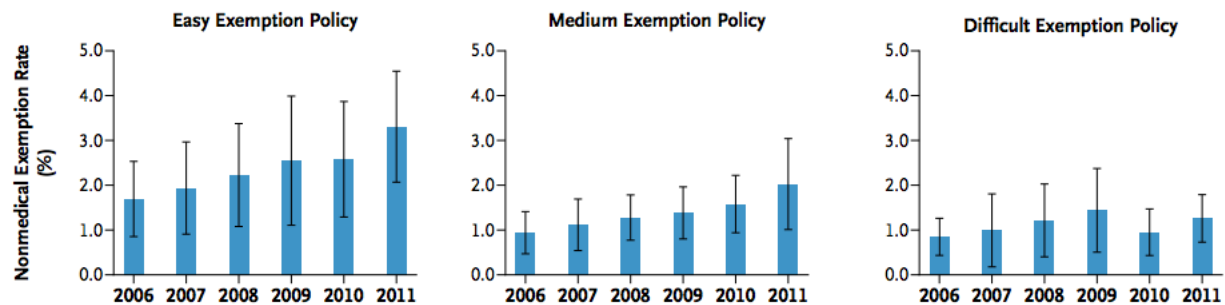


Figure 1. Rates of Nonmedical Exemptions from School Immunization, According to Ease of Obtaining, 2006-2011. Omer et al. 2012 NEJM (19)

Children who are unvaccinated for certain diseases are at much higher risk of acquiring that disease than fully vaccinated children. Various studies show a 23-fold higher risk for pertussis,(20) 22-fold higher risk for measles,(21) and 9-fold higher risk for varicella(22) among vaccine exemptors. Popular use of alternative schedules also places other community members at risk for infection, including those with medical reasons for non-vaccination, infants that are too young to have received a certain vaccine, and older adults whose immunity has waned. Vaccination at a public health level works both by inoculating individuals and creating immunity of the “herd”. If a certain threshold of vaccinated individuals is not met, then a resurgence of infectious disease occurs. This threshold is different for every disease, and is based on its level of contagiousness and the efficacy of its vaccine. Most diseases have a threshold between 70-90% vaccination rate to prevent resurgence in a community.(23)

Undervaccination has effects on the health of children and communities, but parents’ concerns often convince them that an alternative vaccination is the correct course

of action. This paper will explore these concerns in depth and examine additional thought processes that contribute to vaccine hesitancy in parents. It will also explore the important role of nurses in helping parents work through the vaccination process of their children.

## **Addressing Parental Concerns about the CDC Vaccination Schedule**

### **Too Many, Too Soon**

The most common theme stated by parents who choose to alternatively vaccinate their children is “too many, too soon.” Unpacking this simple statement shows parents’ concern that children receive too many vaccines at once, and receive them at too young an age. On the current CDC/AAP schedule, children receive 25 vaccinations against 16 different diseases before the age of 18 months.(24) In 1980, children were only vaccinated against seven diseases throughout their childhood.(25) It is understandable for parents to be concerned about the large number of immunizations received by their child, especially when the child is often upset from pain during the vaccination process.

Parents believe that multiple vaccines will overtax a young child’s immune system, leading to a greater chance of adverse events or long-term health consequences. Much of the anti-vaccine and pro-alternative schedule literature repeats this concern, and Dr. Sears warns of “unnecessarily overloading young kids with vaccines” in his book. Vaccine experts have insisted, however, that healthy children’s immune systems are fully capable of handling the workload of multiple vaccinations in one visit.(7–9) Children are exposed to a large number of germs and their antigens in normal life, estimated to be in the range of 2,000-6,000 daily.(8) Their bodies create antibodies to fight the bacteria and viruses they

encounter, and the immune system is taxed much more heavily by natural infection from a minor illness than by a vaccination. This is because vaccinations do not typically contain the whole toxin of a disease, but are created from smaller components of bacteria and viruses, such as proteins and polysaccharides.(26) Current vaccines have very few immunological components compared to older versions of vaccines, rendering them less of an immune system burden than ever. In the early 1900s, children only received the smallpox vaccine, which contained 200 viral components in a single dose, and in the 1960s, children received 3 vaccines that contained over 3000 immunological components. (25) In contrast, the number of immunological components found in the current full childhood vaccine schedule is around 160.(8,27) Advances in vaccine technology and production have reduced these numbers greatly, while the number of diseases vaccinated against increases. A study by Cohn and Langman estimates that given the power of an infant's immune system, a healthy child could theoretically respond to thousands of vaccines at one time.(28)

Infants are also not too young to handle the immune system needs of routine vaccination. They have strong immune responses to vaccines that allow for better protection long term from vaccine preventable illnesses.(13) Infants are able to mount immune responses immediately after birth, as demonstrated by the antibody response to the Hepatitis B vaccines while babies are still in the hospital.(25) The current CDC schedule is created with the infant's immune system capabilities in mind and protects children from diseases at the age they are most at risk.(26)

Research has not demonstrated increased safety from alternative vaccination schedules.(13) Dr. Sears himself will admit, "we don't know if this precaution is necessary"



and gives no evidence that his schedule has fewer associated adverse events or better long term health outcomes.(11) Other studies have shown that children who receive vaccines according to an alternative schedule are not at less risk for long-term neurological outcomes compared to their typical-vaccinated peers. (29,30) To continue to mitigate parents' fears of "too many, too soon", the Institute of Medicine has arranged a committee to explore feasibility of further research that compares the safety of the CDC recommended schedule with alternative schedules.(10)

### **Fears Regarding Side Effects and Ingredients**

Parents who choose to delay or omit vaccinations often cite a fear of side effects as a major reason for their choice. Throughout the history of vaccines, there have been worries that immunizations caused harm, both in the immediate and long-term. The earliest smallpox vaccine was made using fluids taken from blisters on the hands of a milkmaid infected with cowpox, a milder version of smallpox. There were vocal opponents of this vaccine in England in the 1800s, who believed that the vaccine could cause people to take on cow-like traits.(31) In the 1970s, there were public concerns about the DTP (diphtheria, tetanus and pertussis) vaccine causing epilepsy. These concerns became widespread in the US after the airing of the television documentary *DTP: Vaccination Roulette*. Parents began suing vaccine manufacturers for the alleged damages caused to their children, and these manufacturers began to stop making the DTP vaccine, due to the high costs associated with litigation.(32) In order to prevent a major shortage and assess the validity of these claims, the Vaccine Injury Compensation Fund and the Vaccine Adverse Event Reporting System were created by the US government to stop litigation against individual companies and increase systematic reporting of side effects.(13) Many years of research since have shown

that there is no causal relationship between any vaccinations and seizure disorders (or an increase in cow-like traits!). Throughout the years, anti-vaccine advocates have claimed a link between vaccination and diabetes, multiple sclerosis, poor neurological outcomes, and SIDS, all of which have no basis in research. It is natural for parents (and providers) to associate a received vaccine with any poor health outcomes that happen subsequently, even if the true basis for the poor outcome has nothing to do with the vaccine. It is very difficult to know in the short term whether a child's death or severe illness is triggered by a vaccine or would have happened that day regardless.

Fears of side effects include both fear of the disease antigen and other vaccine additives and adjuvants, such as mercury, aluminum, and formaldehyde. For many years, anti-vaccine advocates purported that the thimerosal (a form of mercury found as a preservative in some MMR vaccines) caused autism in children. Thimerosal has been removed from all vaccines, and the claims of links to autism have been refuted by numerous research studies.(33) Aluminum salts are added to some vaccines as adjuvants to improve the body's immune response. Aluminum has become a more popular concern in recent years, despite the fact that aluminum is more abundantly found in breast milk and infant formula than in vaccines (13) There are about 4.4 milligrams of aluminum in the first six months of the childhood vaccine schedule, while breastfed and formula fed infants receive 7mg and 38mg of aluminum during that time period, respectively.(34) There is also no difference in the amount of aluminum found in the bloodstream before and after vaccination. Formaldehyde is also found in some vaccines, and sounds troubling and toxic to parents. In reality, the amount of formaldehyde in vaccines is one tenth of what naturally occurs in the body as an intermediary in the synthesis of amino acids. (13)

There are some proven side effects that can occur from vaccination, most temporary and mild in nature. The most common adverse reactions to vaccines include swelling, redness, and/or pain at the site of the immunization and fever.(35) These reactions often have to do with the act of injection itself, not the vaccine being given, or are signs that the body is responding appropriately to the vaccine by producing an immune response. Rashes, crying, febrile seizures, and syncope can also occur in relation to a vaccine. Febrile seizures and periods of “inconsolable crying” can be especially disturbing for parents, but neither is typically related to further health problems nor is a contraindication to further vaccination.(33) There is a slightly increased risk for febrile seizures (one seizure per 2,300 children) in the combination MMRV (measles, mumps, rubella and varicella) vaccine at ages 1-2 years, so it is recommended that these vaccines be given separately to those in this age group with a familial history of febrile seizures.(33)

Serious side effects can occur from vaccination, but they do happen rarely so parents must be warned of these risks. Injection-procedure related (not vaccine-content related) serious adverse events include abscess at the site of injection, extremity swelling, deltoid bursitis, and nerve trauma.(33,35) Allergic reactions including anaphylaxis can happen from reactions to additives, culture media ingredients, and infectious antigens, most commonly from egg proteins or gelatin. Estimates for rates of anaphylactic reactions to vaccinations range from 0.1 per 100,000 doses for meningococcal polysaccharide to 2.6 per 100,000 doses for the HPV vaccine. (36,37) The Institute of Medicine has also stated that there is enough evidence to support an association between certain current vaccinations and specific adverse events (Table 1). (35) Many of these side effects are

extremely rare (1 case per million doses) and some (HHE and ITP) are thought to have no long-term health impacts on the child. (33)

Table 1. Vaccinations and Confirmed Related Adverse Events by the Institute of Medicine

Vaccination	Adverse Event
DTaP	Hypotonic-hyporesponsive episodes (HHE)
MMR	Idiopathic thrombocytopenic purpura (ITP) Transient joint symptoms Measles inclusion body encephalitis (MIBE)* *only in immune compromised hosts
Varicella	Dermally disseminated Oka Varicella Zoster Virus** **can lead to organ involvement and CNS disease

Vaccine-hesitant parents want their medical providers to be honest and straightforward with them concerning potential side effects of vaccines.(5) Many parents felt that their provider did not give them adequate information concerning adverse effects of vaccines.(5) Nurses can help separate out fact from fiction when it comes to known risks for side effects and those whose links has been disproven by research.(12)

### Lack of Fear of Vaccine-Preventable Illnesses

Most parents of children today have never met someone with polio or seen a child sick with whooping cough. Many see chickenpox as a rite of passage through childhood without serious consequences. When vaccine-preventable illnesses become less frequent in a society, some members of a population see the need for protection against them as less urgent. While this logic makes sense to some extent (“if no one in the US has polio, my child has almost no risk of contracting it”), it doesn’t take into account the importance of keeping a society disease-free in the long-term. Polio, for example, has devastating effects on many children that it infects, leading to paralysis and death in some of its victims. The average number of cases of polio in the US was over 37,000 in the years before the vaccine was

made available in 1955.(38) Because of strong vaccination efforts, polio has been eradicated from all countries in the world except Nigeria, Afghanistan and Pakistan. (39) In order to fully eradicate polio from the world, we must keep the herd immunity against polio high by continuing to vaccinate children against it.

In other cases, certain vaccine preventable diseases are seen as not serious enough to warrant immunizations. This is a common belief for rotavirus, which was caught by nearly all children in the US before the vaccine became available in 2006. While most of these children only had minor illness, each year an average of >2% required hospitalization for severe dehydration caused by the disease.(23) The financial and emotional costs of these hospitalizations are high, and it is nearly impossible to predict which children will have significant disease from the virus. The story is similar for other “less serious” vaccine preventable diseases, like varicella and Hepatitis A. Most children will get through a course of illness without problems, but a smaller percentage of children will have major health effects from the disease.

In the case of measles and pertussis, the US has already seen the effects of lower rates of vaccination: a resurgence of outbreaks of these diseases. In January – August of 2013 alone, there were 159 cases of measles in the US. Nearly all of the index cases were brought in from another country, and 92 of those affected were unvaccinated due to philosophical objection.(14) There were over 48,000 cases of pertussis in the US in 2012, much higher than rates in the 1970s through the 1990s, when fewer than 5,000 cases per year were typical (Figure 2).(40) Pertussis is an especially uncomfortable disease to have, with thick mucus causing violent coughing and trouble breathing.(23) There were 18 deaths from pertussis in 2012, most among infants younger than 3 months of age.(41)

Children typically do not get their first dose of the DTaP vaccine until 2 months of age, leaving them at risk for catching the disease from the community when herd immunity is too low.(24) Outbreaks and deaths from these diseases are very preventable and would not be happening as frequently if children were more fully vaccinated.

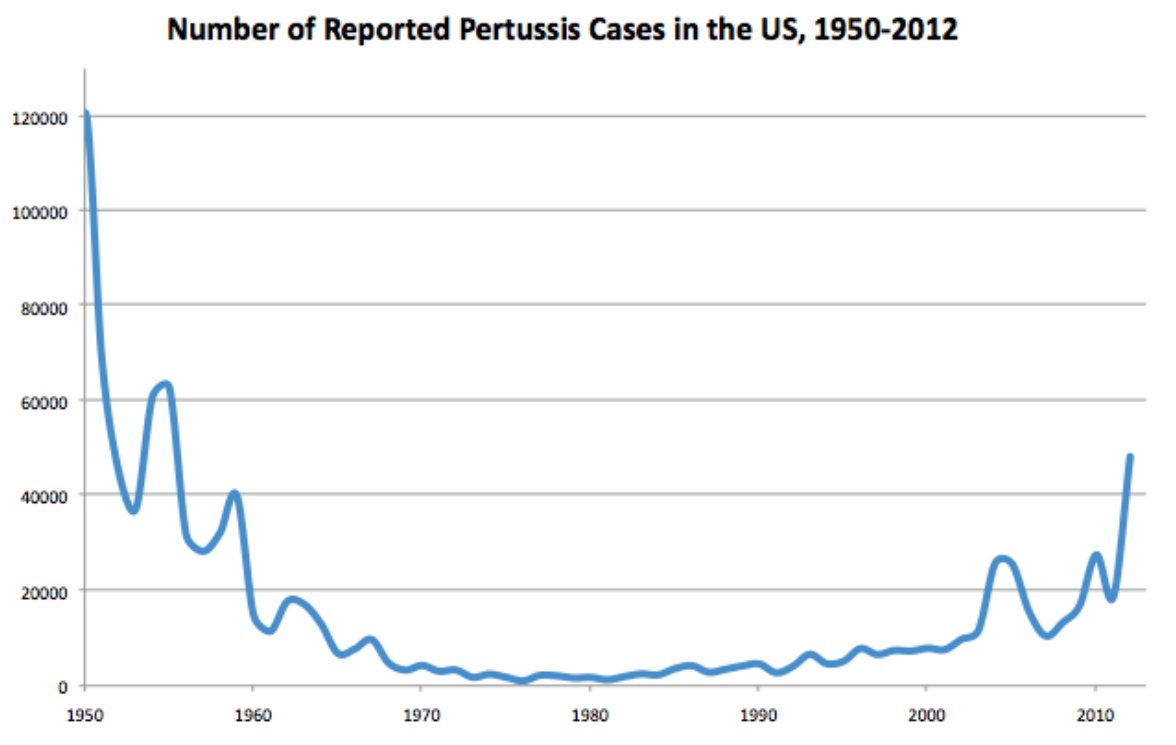


Figure 2. Number of Reported Pertussis Cases in the US, 1950-2012, CDC Data

## Thought Processes that Contribute to Vaccine Hesitancy

While many parents may be convinced by the evidence to use the recommended CDC childhood vaccination schedule, parental vaccine hesitancy is often more complex than merely presenting the facts would suggest. Parents may fall into certain decision-making patterns that lead them to the different conclusions when assessing the risk of vaccines. Vaccination choices are also influenced by negative views of the government or scientific

establishment. Vaccine hesitant parents need to build trust with medical professionals to overcome these thought processes.

### Error of Omission

The risks of side effects of vaccines are seen as a more immediate threat or larger danger than the risks of contracting a vaccine-preventable illness. There are many common thought processes that go into this line of thinking. First, most people prefer the risk of harm from not doing something (“error of omission”) than from actively vaccinating or doing something (“error of commission”).(2) There is something very straightforward about having a bad reaction to something someone chose to put into one’s child’s body (and the guilt along with that decision) compared to the less deliberate action of one’s child catching a disease due to lack of vaccination. Research has shown that people generally perceive more risk when the hazard is due to active human causes than passive natural causes.(42)

### Ambiguity Aversion

Second, people have preferences for known risks versus unknown risks, called “ambiguity aversion.”(43) While this is not always the truth, many parents feel that the risks of side effects are more widely known than the risks of vaccine preventable diseases. Again, it is seen that as a parent, one is definitively putting one’s child at risk for adverse effects when one vaccinates him or her, but the chances of catching measles are only a probability. This sense of ambiguity can make parents feel that they are missing critical information related to risks and benefits of vaccination, causing them to delay or avoid action until such information is obtained.(42) This presents problems to parents when the

missing information they seek does not exist, or exists only from sources that are perceived to be biased.

### **Sense of Perceived Control**

Parents who alternatively vaccinate also may feel a greater sense of control over their child's health.(12) They are actively making choices about what will happen to their child and not "just going along" with what is recommended. This sentiment is echoed in much of the alternative vaccination literature. Dr. Sears states at the end of his book: "I want you to formulate your own decision without letting my opinion sway you one way or another."(11) This sense of control appeals to many parents and gives them confidence that they are equipped to make decisions about vaccination schedule changes. Parents also may feel that they are able to control the environment their young children are exposed to, reducing the need to take protective measures like vaccination against disease.(42) Modern parents have many choices about how they want to parent their child, choosing from many different styles and recommendations. Alternative vaccination is seen as a continuation of asserting one's parenting style to provide the best outcomes for their children.

### **Schemas Related to Science and Government**

Schemas are the filters through which we view incoming information about the world, based on our prior experiences, values and social norms. The less a person knows about a topic, the more he or she relies on his schemas to help him make decisions and assess risk about a situation.(44) Many people have strong preconceived notions about the role of science and government in today's world. Vaccination occupies an interesting



intersection of these two areas. There are few scientific endeavors that are more closely associated with the government, and distrust in either leads to distrust in vaccines.(45) Many anti-vaccine advocates promote the idea that vaccine researchers lie to the public for their own monetary gain from pharmaceutical sponsorship. Vaccine researchers become frustrated with these accusations and may classify all vaccine hesitant parents as irrational. This further deepens the divide between the scientific world and the skeptical public. The public feels harshly judged by the scientists and continues to question their impartiality because both sides of the argument are not given equal consideration.(5,45) Parents then come to mistrust any information that is viewed as coming from the mainstream scientific community and will seek other sources of information about vaccines. (12)

Negative schemas about the government also play in to parents' choices about vaccinations. The government is often seen as over-involved in citizens' lives or comprised of government officials who are willingly misleading the public for their own gain. As a part of public health immunization management, the government must be involved in vaccine decisions and recommendations to protect the health of its people. Vaccine-hesitant parents can view this involvement as "an intrusion into the everyday lives of ordinary citizens and an encroachment on individual civil liberties." (45) There are also concerns from parents about government conspiracies to cover up adverse events from vaccination.(42,46) While there is no evidence that this is the case, firm government positions on mandatory vaccination play into the public's fears about government overreach. Communication information of the benefits and risks of vaccination is not enough to overcome the schemas held by many vaccine hesitant parents. Medical

professionals must build trust with their patients to help guide them through the vaccine decision-making process.

## **Nursing Role in Parental Vaccine Decision-Making**

Nurses are valuable members of the healthcare team when it comes to childhood vaccination. High levels of immunization knowledge are seen in nurses that work frequently with young children - in one study, scoring higher than physicians on a knowledge assessment.(47) Parents are receptive to one-on-one communication with nurses regarding their children's vaccines.(48) In most private practices, nurses physically give the children their vaccines and counsel parents on side effects directly prior to administration. In the public health and school health setting, nurses are often the staff in charge of immunization programs, responsible for all parental education.(49) The interaction between parent and nurse surrounding vaccine administration is critical to building parent trust in the vaccination process.(50) Despite nurses' importance, the vast majority of parental vaccine hesitancy literature ignores the nursing role, and focuses only on physician interaction with parents.(43,51)

## **Therapeutic Communication Skills**

Therapeutic communication is face-to-face interaction between a client and provider that establishes rapport, promotes understanding of the client's view, and helps the client and provider work together to meet the client's health needs. Nurses are trained in therapeutic communication throughout their college coursework, and it is seen as a cornerstone of quality nursing practice.(52) The nurse conveys that he or she cares about

the client's views and situation through use of therapeutic communication techniques. These include clarification, active listening, reflection, and promoting reassurance and respect for the client.(53) Vaccine hesitant parents express that medical providers do not take their concerns seriously.(42) Through therapeutic communication, nurses are able to convey a sense of respect for the parent that allows for them to be more open to listening to new information. There is no judgment expressed on the part of the nurse and no "talking down" to the parents about their hesitancy regarding vaccination. Vaccine hesitant parents build trust with medical providers on a case-by-case basis.(4) Once a medical professional is trusted, a parent is more willing to listen to information regarding vaccines

Broad questions about vaccination asked by the nurse will help him or her better understand the reasons for the parents' hesitancy, and be able to specifically address these concerns. All too often, providers assume they know what a patient is concerned about and jump ahead to their explanation of why that view is incorrect. A parent may have had a child who had an adverse reaction to a vaccine earlier and has questions about the medical need for exemption. Another parent may have concerns specifically about autism and vaccinations. Through therapeutic communication, parents can better express their views by feeling that their opinion is validated and valued, while getting information that is tailored to their needs.(51) Parents also feel more a part of the decision making process for vaccination when therapeutic communication is used. These communication techniques allow parents to have a greater sense of perceived control and feel more comfortable with the health choices they made for their child.

Conversation analyses conducted by Plumridge, Goodyear-Smith and Ross give valuable insight as to how nurses use therapeutic communication during conversations

with parents before, during and after immunization.(50,54) Nurses are especially adept at building rapport with parents using “small talk” about their children on non-medical topics. Nurses also often talk to the babies they are immunizing even though many are preverbal. This “baby talk” can provide reassurance to both children and parents about the progress of vaccination and that the child is going to be fine: “Just one more, that’s perfect” and “It’s alright, sweetheart”. (54) Nurses also employ communication strategies when discussing immunizations that remind parents that they are the experts of their own children, while still conveying their own medical expertise.(50)

### Trust as a Profession

Nursing is consistently ranked as the most trusted profession. In the most recent Gallup poll, 82% of people would rank nurses as high or very high for honesty and ethical integrity, the highest of any profession.(55) Nurses are regarded as also regarded as having high levels of compassion for the patients that they serve. This compassion is often related to high emotional intelligence: the ability to perceive, understand and manage emotions in oneself and others.(56) Patients are much more likely to trust medical providers with higher emotional intelligence.(57) Vaccine messages have more influence when “the messenger is perceived as likeable, trustworthy, and working toward the same goal as the intended audience.”(4) With these beliefs about the nursing profession, it is easy for parents to believe that their child’s nurse has their best interests at heart and to trust what they say about immunizations.

Nurses are more likely than physicians to be perceived as peers by parents. It is common for parents to closely identify with nurses, recognizing them as part of the same socioeconomic status and community, allowing them to better personally connect with

them. People tend to trust the option of experts that have the same cultural worldview.(45) Opposite from the expected outcome, the fact that nurses are less educated than physicians gives them more credibility with many vaccine hesitant parents, because they are coming from a “less biased, non-insider” point of view. Related to this, they are also seen as less under the influence of the “medical establishment”. Nurses are less tied to pharmaceutical companies, and their opinions less likely to be swayed by financial support through sponsorships and research grants. Parents may identify that nurses have less to gain from misleading their clients than other medical professionals. Because nurses are likely to be trusted, they are well positioned to have conversations with vaccine hesitant parents.

### **More Time, More Opportunities**

Counseling vaccine hesitant parents takes more time than a typical pediatrician or family physician visit allows. Nurses often have more time and opportunities than providers to discuss concerns with patients.(49) Parents come to the vaccine debate from many different angles and can be varied in their specific concerns. When nurses understand these concerns, they are better able to tailor the information they give to each individual parent. Tailored health information is perceived by the parent as more relevant than broad messaging campaigns and can be more influential on their beliefs.(4) Generic educational brochures about vaccination were much less credible with mothers than those that targeted groups of mothers with specific vaccination attitudes.(58) When nurses have more time to discuss and get to know the families they serve, there are more conversations tailored to the parents’ individual beliefs surrounding vaccination.

In most pediatrician or family physician offices, nurses are the first line of communication and perform telephone triage when parents call with concerns. Nurses are

often the medical providers who physically give shots and are charged with discussing benefits and risks immediately prior to vaccination using the CDC Vaccine Information Statement (VIS) sheets. An informed nurse has many opportunities to discuss vaccines with parents.

Many parents wish to discuss vaccination choices prior to the birth of their child.(49) Nurses working in prenatal health at OB/GYN or midwife practices have multiple interactions with pregnant clients. Pregnant women are currently recommended to receive the influenza vaccine (containing the H1N1 strain) and the Tdap (tetanus, diphtheria and acellular pertussis) vaccine during pregnancy, most often administered by a nurse. A mother discussing these maternal vaccines with her nurse opens the door for discussion regarding future immunization choices for her child. Deciding on the best immunization plan is an ongoing process for vaccine hesitant parents, and many do a large amount of independent research prior to the birth of their child. Prenatal nurses interact with patients on a regular basis during pregnancy, allowing for multiple opportunities to engage parents in discussing their concerns.

### **Limitations to Nursing Role**

There are some limitations to the role nurses can have in helping parents make choices about their children's vaccinations. It is not uncommon for nurses to have vaccine hesitancy of their own. Nurses report greater concerns about vaccines than physicians. (59) Nurses historically have had poor uptake for the influenza vaccine, estimated to be only 40% to 60%. This made mandates necessary at many hospitals to increase vaccination rates during the H1N1 flu epidemic. Only 42% of nurses believe that the influenza vaccine is effective at preventing the flu and almost half who declined the vaccine only cited

“personal preference” as their reasoning. (59) Low rates of influenza vaccination and negative attitudes about the vaccine are also found commonly among senior nursing students. (60) These attitudes are seen more predominantly in the general nursing population as opposed to nurses who work commonly with vaccines. Increased knowledge through vaccine education could work to improve nurses’ own vaccine hesitancy.

Nurses are also not trained extensively about vaccines during their typical schooling. Many providers, including nurses, may get information about vaccination from untrustworthy sources on the Internet, as do many vaccine-hesitant parents. Additional training on the benefits and risks of immunizations would be needed for nurses who encounter parents of young children in their practice. There are training curricula available for nurses online, such as the Nursing Initiative Promoting Immunization Training (NIP-IT),(61) developed by The University of Oklahoma College of Nursing and the Centers for Disease Control and Prevention. This training offers continuing education credits and modules on various vaccination topics, including common vaccine concerns. Nurses must be fully informed about vaccinations from appropriate sources in order to answer parents’ questions fully and accurately.

Lastly, nurses are well liked and trusted by a majority of the population, but some parents will only trust information given to them by a physician. This may be true of parents who have higher education themselves and see the physician as more of peer than the nurse, or by parents who trust inherently trust someone with higher credentials. The physician conveys most critical information in private practices to parents, so parents may question the nurse’s knowledge and authority in vaccine discussions.

## Conclusion

Parents' use of alternative childhood immunization schedules negatively affects the health of children in the US by leaving children vulnerable to vaccine preventable illnesses and lowering overall herd immunity. Despite this effect, many parents continue to use alternative schedules because they have concerns about overwhelming their children's immune systems, vaccine side effects and their safety. Accepting vaccination is a complicated process for many people, which involves overcoming fears about ambiguity and risk, loss of control, and negative feelings toward science and the government.

Nurses play an important role in the vaccination process and should be seen as a larger part of the solution to low vaccination rates. Nurses are often on the front lines of vaccination and should be included in the conversation to improve vaccination rates. There is a need for more research on the role nurses can have in addressing parental vaccine hesitancy, especially in parents of infants and toddlers. Nurses are well suited to help parents understand vaccinations better and discuss their apprehensions. Nurses have the right combination of knowledge, trust, time, and empathy to make parents feel their concerns were addressed and help them make decisions about vaccinations. By taking advantage of these nursing traits, the health of the nation's children will be improved while making parents feel more comfortable with the current immunization schedule.



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